

MISSOURI CONSERVATIONIST

VOLUME 81, ISSUE 10, OCTOBER 2020

SERVING NATURE & YOU



HUNTERS, HELP US!

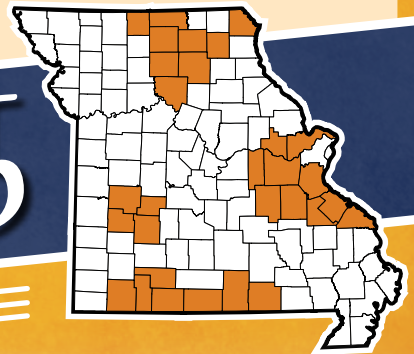


MANDATORY CWD SAMPLING OF DEER OPENING FIREARMS WEEKEND IN 30 COUNTIES

Bring your deer
to a sampling
station near you.

The 30 mandatory CWD sampling counties are:

Adair, Barry, Cedar, Chariton, Christian, Clark, Crawford, Franklin, Gasconade, Hickory, Howell, Jefferson, Knox, Linn, Macon, Mercer, Oregon, Ozark, Perry, Polk, Putnam, St. Charles, St. Clair, St. Francois, Ste. Genevieve, Stone, Sullivan, Taney, Warren, and Washington.



NOVEMBER 14-15



Any changes to mandatory sampling requirements due to the ongoing COVID-19 pandemic will be posted by Nov. 1 at [MDC.MO.GOV/CWD](https://www.mdc.mo.gov/cwd) and be available from MDC regional offices.

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MISSOURI CONSERVATIONIST



ON THE COVER

A merlin soars as it hunts for prey.

📷 NOPPADOL PAOTHONG

100–400mm lens, f/5
1/6400 sec, ISO 1600

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Inbox



Letters to the Editor

Submissions reflect readers' opinions and may be edited for length and clarity. Email Magazine@mdc.mo.gov or write to us:

MISSOURI
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PERFECT PRAIRIES

Prairie Voices, what a beautiful gift of the land [August, Page 10]. Thanks for sharing the stories of the individuals and families working to preserve this jewel. Photographs looked like paradise to me.

Angela Gambino
St. Louis

NIGHTJARS AND SWALLOWTAILS

I found an unusual tail feather at Mark Twain Lake that turned out to belong to a chuck-will's-widow, a bird I had never heard of previously. Two days after that discovery, the *Conservationist* arrived with a full article about them and their close relatives [*The Silencing of Missouri's Iconic Nightjars*, August, Page 22]. It is tragic that we are losing these unique birds, but I'm happy to say there was at least one of them nearby this summer. The whip-poor-will that used to call every night here on the farm has been unheard now for many years, though.

Catching up on my reading, the next incredible and timely article, in the July issue, was Mr. Paothong's very detailed and beautiful piece about the spicebush swallowtail [*From Big-Eyed to Beautiful*, Page 10]. The day before, we had visited a neighboring CRP prairie and were delighted with the many dark-colored butterflies in the wildflowers. Now we know what they were, and their life history as well!

Your magazine is always timely and important in our family's life. Thank you.

Sue Allmart Mexico

KNOWING ABOUT NIGHTJARS

I have received the *Missouri Conservationist* for years and thought I would let you know how much I enjoy reading the magazine. It is filled with pictures and new information every time. I was so excited to learn more about the whip-poor-will. I never knew what they looked like because I would always hear them at night. I could count on them to come out at 9 p.m. sharp. Such a fun bird. Thank you for your faithfulness in keeping up with such a great magazine.

Mardell Bontranger via email

I was particularly interested in the article on the "nightjars." Growing up in the 1950s in rural northeastern Missouri, I fell asleep every night to the

serenade from what seemed to me to be hundreds of these birds. Their distinctive whip-poor-will call was a cherished memory of my childhood roaming the fields and forests. When I moved to the Ozarks, I heard very few of them, but they had a different "hillbilly accent," which I now know is a different species of these birds. For the past 20 years, I don't think I have heard any of them. This is so sad and I really miss the concerts that these birds provided. I hope we can bring them back.

G.L. Hoepfner, DVM Salem

I enjoyed Norman Murray's article on nightjars in the August *Conservationist*. I am happy to report that during my spring turkey adventures I heard significantly more whip-poor-wills calling in numerous locations than I had heard for several springs.

Dr. Doug Burch Neosho

KEEP NATURE CLEAN

While on a bike ride at Creve Coeur Lake in St. Louis County, I came upon a **barred owl** entangled in fishing line and hanging from a tree. This story had a happy ending, though. The World Bird Sanctuary sent a bird specialist who rescued the



owl and took it back to be examined and eventually to be released.

I thought this story might make for a good public service announcement to anglers across Missouri to let them know the potential negative impact of leaving fishing line behind.

Tom Strutz
Chesterfield

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Send a note using our online contact form at mdc.mo.gov/commissioners.



Want to see your photos in the Missouri Conservationist?

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email Readerphoto@mdc.mo.gov,
or include the hashtag #mdcdiscovernature
on your Instagram photos.



1

1 | Barred owl
by Cheryl Sloan,
via Flickr

2 | Yellow patches
mushroom by
Stanley Harlan,
via email

3 | Mink by
ganderson2385,
via Instagram



2



3

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Up Front

with Sara Parker Pauley

✖ A storm was rolling in. My first indication was an unexpected rushing tide of cooler wind that made me look skyward to see what nature was about to unleash. Such a wind is exhilarating because it reminds me of my humanness and the power and mystery of nature. A fall morning does the same — the chill of the air, the changing colors, the V's of our winged kin making their way to wintering grounds. It reminds me that change is coming, despite any protestation to the contrary. It also reminds me to look up and pay heed to the details that I might otherwise miss.

I witnessed this anew one morning last fall on my daily dog walk. A heavy dew had soaked in overnight, and the early morning shafts of light revealed an otherwise unseen world. The day before was a typical walk through the woods. But that day on the same walk, I saw hundreds of intricate spider webs — everywhere in nearly every tree. How ironic that a veil of dew had lifted a veil of another kind, allowing me to see that which was already there. (See more about spiders as architects on Page 11.)

Writer Thornton Wilder said, "We can only be said to be alive in those moments when our hearts are conscious of our treasures." I think that's what fall does for me. It awakens me even more to the treasures of nature, and makes me come alive anew — much like a rushing wind before a storm.

Sara Parker Pauley

SARA PARKER PAULEY, DIRECTOR
SARA.PAULEY@MDC.MO.GOV

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Printed with soy ink



mdc.mo.gov 3

Nature LAB

by Bonnie Chasteen

Each month, we highlight research MDC uses to improve fish, forest, and wildlife management.

HABITAT MANAGEMENT

Prescribed Fire

✳ “Depending on their objectives, our conservation area managers often use prescribed fire to improve habitat, control forest pests, or enrich natural communities,” said MDC Fire Program Supervisor Ben Webster. “Private landowners can do this, too.”

In partnership with the Missouri Prescribed Fire Council (MPFC), Webster teaches the best practices of planning and conducting a prescribed fire. The council comprises private landowners and private contractors as well as several agencies and nonprofits. These include MDC, Missouri Department of Natural Resources, the U.S. Forest Service, Quail Forever, Pheasants Forever, and the National Wild Turkey Federation. “Our practices are based on years of conducting prescribed fires in different conditions and for different outcomes,” Webster said. “Our planning tools also include weather forecasts and fire behavior and smoke modeling programs, which can increase a manager’s confidence in a plan,” Webster said.

“If you can predict how a fire is likely to behave and how much heat and smoke it will produce, it can help you decide how to adjust your plan or even cancel it



MDC staff use drip torches as ignition devices during prescribed fire operations.

Field-tested training helps landowners safely use prescribed fire to improve wildlife habitat

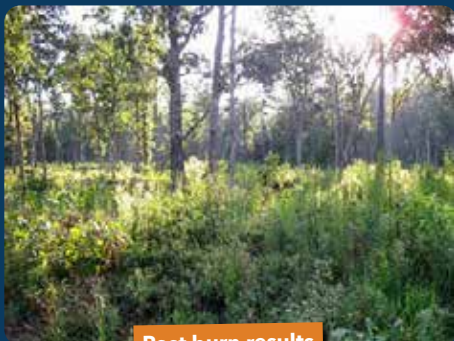
for that day. A big part of a successful habitat burn is whether the neighbors are comfortable with it,” he added.

“A lot of people think all fire is bad,” Webster said. “But if done right, prescribed fire can be one of the best tools for improving habitat for wildlife and even for timber management goals.”

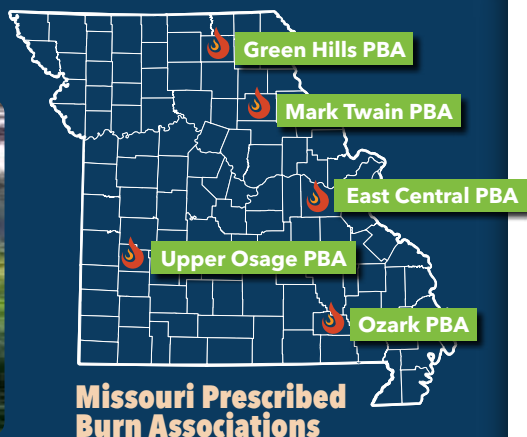
For a schedule of upcoming private landowner burn workshops, contact your local MDC private land conservationist (see Page 2 for phone numbers). In addition, there are five burn associations around the state that may offer potential assistance to interested landowners. To get in touch with the burn association nearest you, visit moprescribedfire.org.

Burn Plan Best Practices at a Glance

- Know your habitat objectives
- Develop a plan
- Establish containment lines
- Check the weather
- Post signs and notify stakeholders
- Brief the crew
- Conduct the burn
- Mop up
- Declare the burn complete
- Review and evaluate



Post burn results



Missouri Prescribed Burn Associations



CHANGES TO 2020–2021 WATERFOWL MANAGED HUNTS

PROCESS MODIFIED
TO ASSURE SAFETY OF
HUNTERS, STAFF DURING
THE COVID-19 PANDEMIC

➔ MDC is committed to providing hunting opportunities on managed waterfowl hunting areas throughout the waterfowl season. To allow for flexibility during COVID-19, there will be no pre-season reservations for the 2020–2021 waterfowl season. There also will be no teal season or youth season

morning drawings. Procedures for individual conservation areas will be posted on the MDC website closer to the season.

All reservations, including ADA blinds, will be allocated through the weekly in-season reservation draw. The first application period will open Oct. 20 and results will be announced Oct. 27. The weekly application period opens every Tuesday at 8 a.m. and closes the following Monday at 3 p.m.

Throughout the season, hunters will be asked to follow precautionary guidelines to assure the safety of everyone at the site during the morning draw. There will be a sliding scale of procedural levels that could range from no staff-hunter contact at all to close to business as usual. At the start of the season, every conservation area will be assigned a certain procedural level based on the status of COVID-19 in the county. The decisions will be made in consultation with the appropriate county health department. Throughout the season, an area could move to a more restrictive procedural level depending on the county health department or other COVID-19 related factors. Some details of the procedural levels are as follows:

■ Red Level (very high COVID-19 risk)

- No staff-hunter contact.
- No facility use.
- 100 percent allocation for Missouri residents only through in-season reservation draw.
- Hunt positions will be pre-assigned.
- No poor line or vacancy filling.

continued on Page 6 »

WATERFOWL MANAGED HUNT CHANGES (continued from Page 5)

Orange Level (high COVID-19 risk)

- Limited facility use and social distancing employed.
- 100 percent allocation for Missouri residents only through in-season reservation draw.
- Hunt parties will be able to select hunt location.
- No poor line or vacancy filling.

Yellow Level (moderate COVID-19 risk)

- Limited facility use and social distancing employed.
- 100 percent allocation for Missouri residents only through in-season reservation draw.
- Hunt parties will be able to select hunt location.
- Poor line only for reservation no-shows.

Green Level (low COVID-19 risk)

- Facility use as guidance allows and social distancing employed.
- 50 percent allocation through in-season reservation draw.
- Hunt parties will be able to select hunt location.
- Poor line for no-shows and 50 percent of hunt positions.

Throughout the season, procedures could change with limited time to notify hunters. To receive updates as quickly as possible, subscribe to the *Waterfowl* email update list at short.mdc.mo.gov/ZoP. Interested hunters also can refer to the MDC website as information is available at short.mdc.mo.gov/ZXx.

MDC has designated staff to help answer any questions hunters may have about the changes to this year's waterfowl season. Please contact the following staff members at the numbers below:

Statewide

- ▶ Lauren Hildreth 573-522-4115, ext. 3259
- ▶ Joel Porath 573-522-4115, ext. 3188

North Zone

- ▶ Chris Freeman 660-646-6122
- ▶ Craig Crisler 660-446-3371
- ▶ Mike Flaspohler 573-248-2530

Middle Zone

- ▶ Luke Wehmhoff 573-624-5821, ext. 4662
- ▶ Gary Calvert 636-441-4554, ext. 4180

South Zone

- ▶ Lauren Hildreth 573-522-4115, ext. 3259

Ask MDC

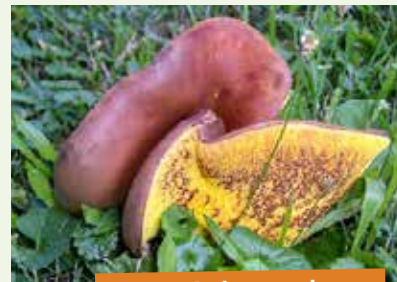
Got a Question for Ask MDC?

Send it to AskMDC@mdc.mo.gov
or call 573-522-4115, ext. 3848.

Q: What is this fungus near my ash tree? The outside is like a polished leather boot; the underside is bright yellow with a pin-hole texture. Some are over 5 inches in diameter. The stems are short, woody, and hard to pull. No rotten wood lies beneath them, only grass roots and dirt. Does this mean my tree is dying and do I need to have it removed?

➔ Based on the description and location of these mushrooms, they are likely the ash tree bolete mushroom. This native fungus has a fascinating symbiotic relationship with the leafcurl ash aphid. In addition to feeding on ash leaves, these aphids also can suck sap from the roots of ash trees. The mycelium, or rootlike structure, of the ash bolete fungus forms a protective knot around the aphids feeding on tree roots. As aphids feed on tree sap, they produce a sugar-rich liquid excrement known as honeydew. In this symbiotic relationship, the fungus gains nutrients from the aphid honeydew and in turn provides protection to the aphids inside the fungal knots.

Although there is still little known about this relationship, neither the presence of ash tree bolete mushrooms nor the aphids are causes for concern, and treatment is not considered necessary or practical.



Ash tree bolete mushroom

Q: Why do I keep seeing box turtles soaking in my pond? I have noticed this since late August.

➔ Box turtles are terrestrial, but it is quite common for them to seek out water during the hottest months of the year. Typically, they will bury themselves in the shallow water's muddy soil or loiter near the water's edge. This helps them keep hydrated until cooler autumn temperatures occur.

Q: I planted moon flowers and on the very first bloom this moth arrived. Can you tell me what it is?

➔ This appears to be a Carolina sphinx moth (*Manduca sexta*). This moth, also called the six-spotted sphinx moth due to the six pairs of orangish-yellow spots on the abdomen, is a breeding resident found throughout Missouri. Adult Carolina sphinx moths take nectar from deep-throated flowers such as this moonflower. Carolina sphinx moth larvae



Carolina sphinx moth

are found on host plants in the nightshade family — such as tomato, potato, tobacco, and pepper — and many gardeners are familiar with them as large, green caterpillars, called tobacco hornworms.

Moonflowers are native to tropical America, but can be grown in Missouri as warm-weather annuals. Gardeners enjoy their fragrant, white flowers, which attract night-flying insects and bloom at dusk from mid-summer

into fall. Although moonflowers may be beautiful, sphinx moths also visit many native plants, including trumpet creeper and phlox. Although Missouri's insects can use nonnative flora, conservationists are proponents of using native plants because they provide the largest bulk of nourishment Missouri's wildlife needs to survive. For more information about how to include natives in your garden landscape, visit short.mdc.mo.gov/ZBX.



Michael Collins

STODDARD COUNTY
CONSERVATION AGENT

offers this month's

AGENT ADVICE

Youth firearms deer season is Oct. 31–Nov. 1. It's a great time to pass on the tradition of hunting to the next generation, and to instill proper safety measures. Always wear hunter orange afield. Identify your target and what's beyond it. When using a tree stand, use a harness. Make sure you are comfortable holding, aiming, and shooting your firearm. Remember, during this weekend, youth hunters age six through 15 can purchase resident or nonresident deer hunting permits at a reduced price. If a youth has not received hunter education certification, he or she must be accompanied by an adult who has a valid hunter certification or who was born before Jan. 1, 1967.

FOR MORE INFORMATION, VISIT
SHORT.MDC.MO.GOV/ZXV.

What IS it?

Can you
guess this
month's
natural
wonder?

*The answer is on
Page 8.*





This recipe is from *Cooking Wild in Missouri* by Bernadette Dryden, available for \$16 at mdcnatureshop.com.

VENISON KEBABS

'Tis the season. Deer season in Missouri is upon us, and freezers will soon be stocked with venison. Before you use it all in traditional ways — chili, jerky, and sausage — give this recipe a try. Not only is it quick and easy, but it can easily be adjusted to suit any taste. These miniature meatloaves on a stick are versatile enough to be served with your favorite sides, too.

Makes 4 to 6 servings

INGREDIENTS:

1 pound ground venison	1 teaspoon salt
½ cup onion, finely chopped	¾ teaspoon black pepper, coarsely ground
¼ cup fresh parsley, finely chopped	½ teaspoon paprika (or smoked Spanish paprika)
¼ cup fresh cilantro, finely chopped	¾ teaspoon hot red pepper flakes
4 garlic cloves, minced	1 tablespoon extra-virgin olive oil

EQUIPMENT NEEDED: oiled baking sheet, 6 bamboo skewers (10 or 12 inches long)*

MIX all ingredients together and chill for at least 3 hours or overnight. Remove skewers from water and shake off excess. Firmly pack meat mixture around the skewers in 3-inch-long, 1-inch-thick links — two to a skewer.

PLACE skewers on the oiled baking sheet and carefully turn them to lightly coat the meat with oil. Remove skewers from the sheet carefully and place them on a grill heated to medium. Cook 10 to 15 minutes — carefully and gently turning them halfway through. A metal spatula gently pushed under the kebabs helps to turn them.

***SOAK YOUR SKEWERS:** Be sure to soak bamboo skewers in water for at least 30 minutes (or more) to keep them from igniting on the grill. Metal skewers don't need to be soaked, but they are often bigger and tear the meat when threading in a way the smaller bamboo ones don't.

WHAT IS IT? EASTERN MOLE

The chipmunk-sized eastern mole lives in a series of tunnels underground, using its palmlike, short front feet to move through the soil. Although its eyes are only good for telling light from dark, its senses of hearing, touch, and smell are acute. Often deemed a nuisance, moles' constant digging and tunneling aerates the soil, permitting air and rainwater to penetrate deeper. They eat half their body weight daily, harvesting destructive insects like cutworms and Japanese beetle larvae.



CWD

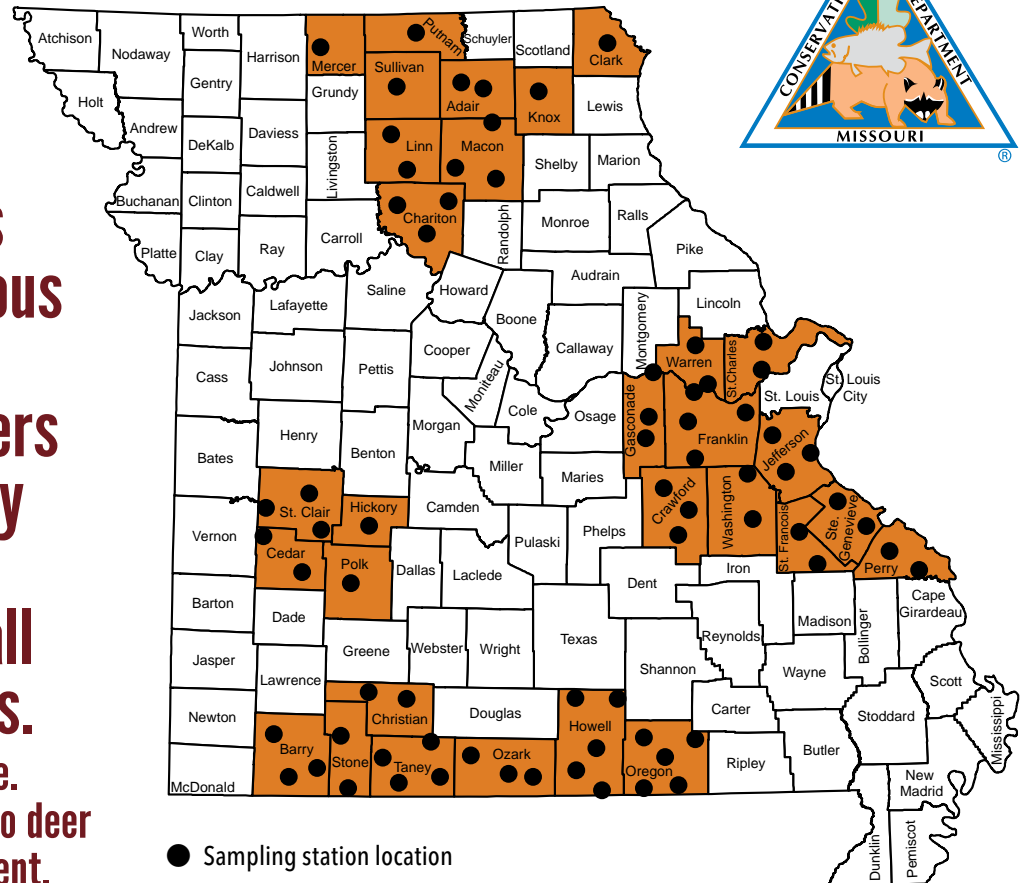
Info to Know for the 2020–2021 Deer Season

Chronic wasting disease (CWD) is a deadly, infectious disease in deer and other members of the deer family (cervids) that eventually kills all animals it infects.

There is no vaccine or cure. CWD is spread from deer to deer and through the environment. MDC continues efforts to limit the spread of CWD in Missouri by finding new cases as early as possible and slowing the spread to more deer in more areas. Learn more at mdc.mo.gov/cwd.

Mandatory CWD Sampling Nov. 14 and 15

Hunters who harvest deer in any counties in the CWD Management Zone during opening weekend of the November portion of fall firearms deer season (Nov. 14 and 15) are required to take their harvested deer (or the head) on the day of harvest to an MDC CWD sampling station. Sampling and test results are free. Find locations online at mdc.mo.gov/cwd or from MDC's 2020 Fall Deer & Turkey Hunting Regulations and Information booklet.



● Sampling station location

■ CWD Management Zone. The CWD Management Zone consists of counties in or near where cases of CWD have been found. Hunters who harvest deer in any of the orange counties Nov. 14 and 15 must take their harvested deer (or the head) to an MDC CWD sampling station on the day of harvest. **Any changes to mandatory sampling requirements due to the ongoing COVID-19 pandemic will be posted by Nov. 1 at mdc.mo.gov/cwd and be available from MDC regional offices.**

Any changes to mandatory sampling requirements due to the ongoing COVID-19 pandemic will be posted online by Nov. 1 at mdc.mo.gov/cwd and be available from MDC regional offices.

Voluntary CWD Sampling All Season Statewide

MDC will again offer statewide voluntary CWD sampling and testing of harvested deer during the entire deer season at select locations throughout the state. Find locations and more information online at mdc.mo.gov/cwd or by contacting an MDC regional office.

Before arriving at a sampling station:

- Field dress and Telecheck deer.
- Bring the carcass or just the head.
- Capes may be removed in preparation for taxidermy.
- Position deer in vehicles with head and neck easily accessible.
- Be sure the person who harvested the deer is present.
- Have the hunter's conservation number, along with the county of harvest.
- If using a paper permit, have it detached from the deer for easy access.
- If using the MO Hunting app, have permit and Telecheck information available.

CWD Test Results

Get test results for CWD-sampled deer online at mdc.mo.gov/CWDTestResults. Results are free and will be available within weeks after the sampling date.

New Regulations on Cervid Carcasses

These new regulations, included in the *Wildlife Code of Missouri*, are part of MDC's ongoing efforts to slow the spread of CWD.

For hunters who harvest deer in Missouri from a CWD Management Zone county:

- Deer must be Telechecked before any parts of the carcass may be transported out of the county of harvest.
- Whole carcasses and heads may only be transported out of the county of harvest if delivered to a licensed meat processor and/or taxidermist within 48 hours of exiting the county of harvest.

- The following carcass parts may be moved outside of the county of harvest without restriction:
 - ▶ Meat that is cut and wrapped or that has been boned out
 - ▶ Quarters or other portions of meat with no part of the spinal column or head attached
 - ▶ Hides from which all excess tissue has been removed
 - ▶ Antlers or antlers attached to skull plates or skulls cleaned of all muscle and brain tissue
 - ▶ Upper canine teeth
 - ▶ Finished taxidermy products

For hunters bringing deer and other cervids into Missouri from another state:

- Hunters may no longer transport whole cervid carcasses into the state.
- Heads from cervids with the cape attached and no more than 6 inches of neck attached may be brought into Missouri only if they are delivered to a taxidermist within 48 hours of entering Missouri.
- There is no longer a requirement that cervid carcass parts coming into the state be reported to the MDC carcass transport hotline.
- The following cervid parts can be transported into Missouri without restriction:
 - ▶ Meat that is cut and wrapped or that has been boned out
 - ▶ Quarters or other portions of meat with no part of the spinal column or head attached
 - ▶ Hides from which all excess tissue has been removed
 - ▶ Antlers or antlers attached to skull plates or skulls cleaned of all muscle and brain tissue
 - ▶ Upper canine teeth
 - ▶ Finished taxidermy products

For taxidermists and meat processors:

- Taxidermists and meat processors throughout the state are required to dispose of deer, elk, and other cervid parts not returned to customers in a sanitary landfill or transfer station permitted by the Missouri Department of Natural Resources.
- Proof of disposal must be retained for 12 months for meat processors and for three years for taxidermists.

Share the Harvest

Missouri's Share the Harvest program helps deer hunters donate venison to those in need. To participate, take harvested deer to an approved meat processor and let the processor know how much venison is to be donated. Deer harvested within the CWD Management Zone may only be donated to approved processors in the Share the Harvest CWD Testing Program. Deer harvested outside of the CWD Management Zone may be donated to any Share the Harvest processor. Learn more online at mdc.mo.gov/share or from MDC's *2020 Fall Deer & Turkey Hunting Regulations and Information* booklet.

More Information

Get more information on CWD regulations and other CWD information online at mdc.mo.gov/cwd or from MDC's *2020 Fall Deer & Turkey Hunting Regulations and Information* booklet, available where permits are sold and online at short.mdc.mo.gov/ZXv.



HIDDEN Architects

PURSEWEB
SPIDERS
RELY ON
CAMOUFLAGE
FOR SURVIVAL

by Paul Calvert

The world has been blessed by many outstanding architects. Most people recognize Leonardo da Vinci, Michelangelo, and Frank Lloyd Wright, but frequently overlook the Baltimore orioles that weave their intricate nests, the potter wasps that produce their tiny clay pots, and the spiders, the oh so many spiders, that spin their webs.

A female redlegged purseweb spider, which can reach the size of a quarter, was coaxed outside of her tube for a photo. These spiders rarely, if ever, leave the protection of their silken homes.

PHOTOGRAPH BY
NOPPADOL PAOTHONG



Nature's architects build homes of all shapes and sizes, using a variety of materials. The tree bark helps to conceal this purseweb tube.



Baltimore oriole nest



Potterwasp nest



Yellow garden spider web



Bowl and doily spider web

Missouri has over 400 species of spiders, but not all of them spin webs. Of those that do, hours could be spent talking about their abilities to weave their masterpieces, from the large orb webs of the black and yellow garden spiders (*Argiope aurantia*) to the delicate webs of the bowl and doily spider (*Frontinella pyramitela*). However, some survive by hiding their silken homes in plain sight.

THE HIDDEN HOME

Trapdoor spiders and purseweb spiders spend most of their lives in their hidden homes. Both live in silk-lined burrows, with the trapdoor spider's home ending at the surface with either a camouflaged folding door found in the turret spiders (*Antrodiaetids*) or a cork lid covering built by the trapdoor spider (*Ummidia*). The purseweb spider constructs tough silken tubes carefully disguised with dirt, bits of lichen and moss, that extend up the sides of tree trunks or along the ground 6–12 inches.

Like all tarantulas, the redlegged purseweb spider (*Sphodros rufipes*) is stocky, built low to the ground with short strong legs. The female is a little larger than a quarter and the male a little smaller. Females are plump with a black cephalothorax (head and chest area), eight black legs, and a dark chocolate to chocolate brown abdomen. Males are easily distinguished from the females, being much sleeker with a black cephalothorax, smaller abdomen, and bright crimson legs.

When a purseweb spider is first encountered, everyone's initial response to them is reminiscent of Little Red Riding Hood to the wolf, "what big teeth you have." A spider's "teeth" are called fangs, and the entire jaw unit is called the chelicerae. In the purseweb spider, the chelicera and the paraxial



MISSOURI'S SPIDERS

Missouri's spiders come in two types, Mygalomorphae (tarantula like) and Araneomorphae (true spiders). Differences in these two groups are many, but one of the biggest differences is how their fangs work. Mygalomorphs have paraxial fangs, which work like those of a rattlesnake. True spiders have diaxial fangs, which work like a pair of pliers. Paraxial stab; diaxial pinch. Those in the mygalomorph group include our native tarantula, two families of trapdoor spiders, and three species of purseweb spiders.

Mygalomorphs are long-lived spiders compared to their cousins, the true spiders. It takes several years for them to become sexually mature. Unlike our native tarantula, very little is known about Missouri's smaller versions, but scientists believe they can live up to 10 years. Males live shorter lives, dying shortly after becoming sexually mature.

MYGALOMORPHAE

Redlegged purseweb



ARANEOMORPHAE

Wolf spider



fangs are quite large. These fangs are disproportionate to the overall size of the spider — almost a third of the size of males and a little less in females. This aids in their unique hunting strategy.

Redlegged purseweb spiders build their tubes upright and attached to hardwood trees in their natural habitat of deciduous forests or woodlots, typically on north or east facing slopes. However, they are quite adaptable and have been found in urban areas on buildings or fences. As mentioned above, these spiders spend most of their lives (four to 10-plus years) in these silk-lined burrows. Females rarely, if ever, leave, while males leave to seek out females when they become sexually mature. Their tubes serve as shelter from weather and potential predators. They also serve as well disguised hunting blinds.



As is the case with many species, the male (left) and female (above) redlegged purseweb spider differ in appearance.



Redlegged purseweb (*Sphodros rufipes*)



Fitch's purseweb (*Sphodros fitchi*)



Black purseweb (*Sphodros niger*)

Three species of purseweb spiders (family Atypidae, genus *Sphodros*) are among the "hidden" spiders known to occur in Missouri.



An unsuspecting centipede travels along the dangerous path of a purseweb tube.

A potential prey walks over the exposed portion of the tube, and the spider, sensing vibrations, attacks it from within the tube by impaling it with its enormous fangs.



REDLEGGED PURSEWEB: DAVID BRUNS; FITCH'S PURSEWEB: BETSY BETROS; BLACK PURSEWEB: RICH (CC BY-ND-NC 1.0); CENTIPEDE, PURSEWEB TUBE TRIO, DINNER SCRAPS: NOPPADOL PAOTHONG; PURSEWEB/BEETLE ILLUSTRATION: SHANNON BEAUMONT

CAMOUFLAGE AND STEALTH

Unlike other spiders that rely on their prey to get stuck in their webs, purseweb spiders use camouflage and stealth to acquire their meals. The silk tubes covered in dirt, lichens, and moss are attached to the tree. This attachment is only at the top, allowing the spider to feel every movement on the tube. A potential prey walks over the exposed portion of the tube, and the spider, sensing vibrations, attacks it from within the tube by impaling it with its enormous fangs. Once the prey is subdued, the spider, holding it with one fang, cuts a slit in the tube with the other and pulls the prey inside to consume it at its leisure. Then the spider repairs the tube by stitching up the hole. All of this is done without the spider ever leaving the protection of the tube. Leaving the tube would leave the spider susceptible to predation from birds, mammals, insects, and other spiders.

Never leaving the tube is safe, but it complicates the spider's lifestyle. Living in the same tube for several years and using it as your grocery store, kitchen, and dining room can cause a house-keeping nightmare. All mygalomorphs macerate their food, meaning they begin the digestive process by injecting their prey with enzymes that liquify the soft tissue, allowing the spider to suck out the liquified flesh and tissue. So, after the spider is done eating, the main course is left in a heap of body parts consisting primarily of the insect's hard chitinous outer shell. The spider takes it to the top of the tube and dumps as much of it out of its tube as possible. Other parts fall to the bottom of the tube and become the floor covering in the home.

Space also can be a problem as the spider grows. Instead of moving out of their current home, they add on to their existing residence. Although it is unknown how they do this, we know they cut their web to drag their food into the purse. We can assume that they expand the tubes in similar fashion by cutting the tube and repairing it with additional silk.



Two immature purseweb tubes (and an abandoned tube in the middle) utilize the same tree. Look closely to see discarded dinner scraps along the top of the tube.

A DEADLY DATING GAME

Since the females never leave their burrows, and eat almost everything that touches the tube, mating is tricky for the males. After the male's final molt, they become sexually mature and begin roaming to find their partner. In Missouri, this usually happens in June. It is believed that a chemical scent called pheromones attracts the male to the female's web. Once he locates the tube, he must be very careful, tapping at the outside of the tube in a way that indicates he isn't prey. After tapping for a while and not being eaten, he enters the tube. Ultimately, whether he's eaten or not will be up to her. If the female inside isn't ready to mate or has already mated, she won't hesitate to eat him when he attempts to enter the burrow.

Once mating occurs, eggs are laid, hatched, and remain in the tube with the female until it is time for them to leave. Some believe this is later in the fall, others believe they overwinter in the tube and leave in the spring, and still others believe that it is one year later. But, those are secrets that only the spiders know today.

The next time you are out in the woods hunting or just admiring the natural world around you, look for those architectural wonders of the natural world hidden in plain sight. ▲

Paul Calvert has been with the Missouri Department of Conservation for 26 years and works in the Director's Office as a special assistant to the director. He has always enjoyed studying the life history of insects and spiders and sharing the natural world with those around him.



Meagan Duffee-Yates feeds fresh meat to Alice the merlin after a successful training session.

Blue Sky Ballet

AT ITS MOST BASIC, FALCONRY IS A PARTNERSHIP BETWEEN TWO HUNTERS — ONE HUMAN, THE OTHER AVIAN

by Matt Seek | photographs by Noppadol Paothong



On her lunch break, Meagan Duffee-Yates practices ballet in a bean field.

At least that's what it looks like to me.

Her partner in this pas de deux is a merlin, a knife-winged, bullet-headed bird of prey. When Meagan pirouettes in the slippery, half-thawed field, the merlin circles her in a compact orbit, sweeping skyward then slicing down, carving the air like a conductor's baton.

It's a moment of magic on a gray winter day, yet the bird cares not about the performance.

Its attention is focused on the starling carcass that is swinging, like a gruesome black kite, from the end of a fishing pole Meagan is holding. The merlin desperately wants to catch the starling, to seize it in its knobby yellow talons and rip the meat from its bones. And for her part, Meagan is managing — just barely — to keep the carcass beyond the bird's reach.

She counts aloud each rotation, as a dance instructor might tap out beats on a hardwood floor: "One ... two ... three." Around and around. "Four ... five ... six." Adagio and allegro. "Seven ... eight ... nine." Bird and human, spinning and circling like ballerinas.

When she reaches 10, Meagan slows slightly. And with a flurry of wingbeats, the merlin catches the starling, glides to the ground, and the dance ends.



Falconry birds remain wild and have ample opportunity for escape. An easy meal offers a strong incentive to return to the falconer's fist.

A Partnership Among Hunters

As the merlin furiously plucks feathers from the starling, Meagan offers chunks of fresh meat to the ravenous bird. From the edge of the bean field, I watch a negotiation unfold.

The merlin, who Meagan has named Alice, isn't ready to give up the starling she worked so hard to catch. She doesn't want the meat in Meagan's hand. Couldn't care less about it. Refuses to even look at it, as if it were an insulting offer slid across a desk during a job negotiation. Alice mantles her wings over the carcass, shielding it from view. And whenever Meagan tries to

coax Alice onto her gloved fist, the recalcitrant bird flutters backwards with the carcass defiantly locked in her talons.

In raptor parlance, Alice is screaming, "Back off! This is mine."

But Meagan is patient, and after 14 years as a falconer, she knows a few tricks. Before their dance began, she used a pair of surgical scissors to remove most of the meat from the starling. Now, the longer Alice picks at gristle from the carcass, the more appealing the meat in Meagan's hand starts to look.

Eventually, Alice's hunger overtakes her protective instinct, and Meagan spirits away the carcass. When the merlin hops onto Meagan's gloved fist, she immediately rewards it with a chunk of meat.

This negotiation, this act of building trust, is the essence of falconry. At its most basic level, the "sport of kings" is nothing more than a partnership between two hunters — one of them human, the other avian. For the partnership to succeed, the bird must trust that life with the falconer is easier than life in the wild.

"Alice isn't a pet," Meagan told me earlier that morning. "She's a wild bird. If she decides to fly away, there's not much I can do about it."

To prevent fly-offs, falconers strive to keep their birds at a "flying weight," the same way trainers strive to keep boxers at a fighting weight. If a bird grows too fat, it has little incentive to return to the falconer for a free meal.

Meagan records Alice's weight several times a day. She knows how many grams Alice will lose in one hour, two hours, three. These insights help her tease out a tipping point, one that separates the weight at which Alice will return to her fist from the weight at which the call of the wild will grow too sweet to resist.

A (Really) Short History of Falconry

Historians aren't sure how long falconry has been practiced. Some experts peg its origins at about 4000 B.C. on the steppes of Mongolia. Others wonder if it might have originated around 6000 B.C. in what is now Iran. Whenever and wherever it began, there's no dispute that falconry was widely practiced in Asia by at least 2000 B.C. And over the following millennia, it migrated westward.

During the Middle Ages, falconry became known as "the sport of kings." In Europe, stealing a raptor was punishable by death, and strict laws governed who could own particular birds of prey. While nearly anyone could keep a hawk or a kestrel, only a king could fly a gyrfalcon. Falcons needed space for their long, killing dives, and space required wealth.

In the 1800s, as royal land was redistributed and people began hunting with guns, falconry fell out of style. It wasn't until the 1920s that interest in the sport re-emerged. Today, nearly 10,000 people worldwide practice falconry, and about half of them fly their birds in North America. In Missouri, about 140 people hold falconry permits.

Bird by Bird

Meagan's fascination with falconry began at a medieval-themed restaurant in Dallas, Texas, when she was a girl. While diners gnawed on turkey legs, a falconer dressed in royal garb circled

FALCONERS RETURN PEREGRINES TO THE SHOW-ME STATE

By the mid-1960s, fewer than 50 nesting pairs of peregrine falcons were left in the United States. The culprit was DDT, a pesticide widely used to control insects. Contaminated bugs were eaten by small birds that were, in turn, eaten by peregrines. As the chemicals accumulated in the falcons' bodies, females began laying eggs that were thin-shelled and weak. Most wouldn't support the weight of an incubating parent and crumbled before the young could hatch.

Thanks to pressure from environmentalists, DDT was banned in 1972. Soon after, falconers and biologists swooped in to save peregrines from extinction.

Since medieval times, falconers have used hacking towers to train inexperienced raptors. A young bird is placed on a tower, food is left for it daily, and it is allowed to fly freely to gain hunting experience. When it's old enough, it's recaptured and formally trained. Biologists did the same thing with captive-bred peregrines — they just didn't recapture the young falcons once they could hunt on their own.

In Missouri, many falconers donated their peregrines to captive-breeding programs. The young that were produced were hacked in locations throughout the state, including sites near St. Louis, Kansas City, and Springfield.

Thanks to these efforts, populations rebounded in Missouri and across the country. In 1999, the iconic falcon was removed from the federal Endangered Species List.



Peregrine falcons can reach speeds of over 200 mph during steep dives to attack prey.

his peregrine around the arena. It was meant to be an opening act, something to take up time before knights began jousting. But Meagan was mesmerized.

Years later, when she came to Missouri for college, she began studying to take the falconry exam. The test is encyclopedic, covering everything from raptor biology to falconry equipment to basic veterinary care. Meagan studied for months and passed it on her first try.

But the test was the easy part. To become an apprentice falconer, you must enlist the services of an experienced falconer, trap a juvenile red-tailed hawk or American kestrel, and train the bird to your mentor's satisfaction. After two years as an apprentice, you become a general falconer, which allows you to keep up to three raptors of any kind except golden eagles and protected species. Following five years as a general falconer, you advance to master falconer and may keep five raptors of any kind except protected species.

As Meagan progressed through the ranks, she trained nearly a dozen different birds of prey, each one unique from the next. A red-tailed hawk named Autumn was a fantastic hunter, particularly adept at catching squirrels. Winter, another redtail, was rebellious and ornery, and Meagan returned her to the wild after a single hunting season. Annie, an American kestrel, bagged more than 1,000 starlings over her long career. And Mr. Tiggs, another kestrel, has reached the ripe age of 8 as Meagan's hunting partner and is with her still.

The Angel of Death

Back in Meagan's office, she asks if I want to hold Alice. I'm a bit concerned by the bird's formidable talons, but Meagan assures me there's nothing to fear. I extend my arm, and Alice steps from her perch onto my bare fist.

She is wearing a hood, which looks like a 1920s-era leather football helmet except it has a little tasseled knot at the top. Meagan explains that the hood keeps Alice calm. Birds of prey see three to ten times better than the average *Homo sapiens*. The hood allows Alice to hear what's going on around her, but by acting as a blindfold, it removes her overstimulating sense of sight.

"She doesn't worry about what she can't see," Meagan says.

Alice feels weightless and fragile, like blown Venetian glass. But up close, her lethality is evident. She looks like an angel of death, a combination of grace and ferocity framed by airy bones and bound with feathers the color of prairie grasses. She's a creature built to transform death into energy.

"I grew up hunting with my dad," Meagan says. "Falconry appeals to me because it's the most primitive way to hunt. You don't even use a bow or an atlatl."

For me, the appeal of falconry lies in its contrasts: the beauty of life and the ugliness of death, the freedom of wildness and the safety of captivity, an earthbound falconer and a skybound raptor. With Alice on my fist, I think I would love to take up falconry. But just as quickly, I realize I lack the dogged dedication the sport demands.

Alice in Meaganland

Last fall, after more than a decade of flying hawks and kestrels, Meagan set her sights on something sleeker. She found the bird she was searching for near Bushwhacker Lake Conservation Area. It was a juvenile merlin diving relentlessly into flocks of blackbirds.

As a licensed falconer, Meagan has federal and state permits that allow her to capture wild birds of prey. While the merlin continued to hunt, Meagan set out a raptor trap. Within minutes, the bird who would be known as Alice was caught. Meagan interpreted this as a good sign.

"If a bird doesn't hit the trap within a few minutes," Meagan says, "it doesn't have the hunting drive I want."



When she isn't actively hunting, a hood keeps Alice calm by removing her overstimulating sense of sight.

Some may object to taking a bird from the wild. But consider this: The learning curve for a bird of prey is dangerously steep, and nature is an unforgiving teacher. Fifty percent of peregrine falcons, 60 percent of American kestrels, and 70 percent of merlins die before their first birthday. Living with a falconer offers a much better chance for survival than the bird would get otherwise. It's fed a nutritious meal every day, gets routine veterinary care, and has a safe place to live out of the elements. Should either the bird or the falconer decide to part ways, a wild-caught bird leaves healthy, well-fed, and with its survival instincts intact.

Meagan worked quickly but carefully to free Alice from the trap. She slipped a hood onto the merlin's head to settle the bird's nerves. Then she tethered Alice to a special type of perch called a cadge, secured the cadge in the back seat of her car, and drove home.

"Manning" is the first step in establishing a bond between a falconer and a wild raptor. For Meagan, this meant sitting in a dark room for hours on end with Alice perched on her fist like a tiny, feathered gargoye. At first, when Meagan removed Alice's hood, the bird tried to escape. Meagan held tightly to the leather straps around the bird's ankles and waited for Alice to calm down. When she did, Meagan gave her a chunk of meat. This process was repeated, over and over, hour after hour, until Alice lost her fear of Meagan.

First Flight

For a couple weeks, every day holds a new milestone: First the bird quits trying to escape when you take off its hood. Then it bends over to take food, which means it trusts you enough to take its eyes off you. Then it learns to hop from its perch to your fist. Then it flies across the room to your glove. Then it



Merlins eat mostly birds, including songbirds and small shorebirds. They catch prey in midair, usually after an energetic, high-speed chase.

FLIGHT ACADEMY

For more information about falconry, check out these resources:

missourifalconersassociation.com

The Missouri Falconer's Association provides information about becoming a falconer and lists events where you can watch falconers work with their birds.

n-a-f-a.com

The North American Falconers Association also offers great information, including the ethics of falconry and a history of the sport in North America.

sos.mo.gov/adrules/csr/current/3csr/3csr

As you might expect, falconry is one of the most heavily regulated methods of hunting, and both federal and state laws apply. Learn Missouri's rules in chapters 7 and 9 of the *Wildlife Code of Missouri*.

H is for Hawk

This beautifully written book by Helen Macdonald gives a firsthand account of training a goshawk while dealing with the death of her father.



flies outside, farther and farther, while tethered to a long wire called a creance. Then — and only then — do you cut the cord.

The first free flight is maddening for a falconer. Without the creance, there's nothing to keep the bird from flying away forever. All your efforts, hours and hours of training, could disappear over the horizon like a lost arrow.

When the time was right, Meagan took her young merlin to a rabbit-cropped field a few blocks from her home. She placed Alice on her perch in the grass, removed her hood, walked 50 steps upwind, and held out her fist. In an instant, Alice was on the glove, tearing into offered meat like it was the most natural thing in the world. At that point, Meagan remembered to breathe.

Nowadays, Meagan is working to build up Alice's stamina. Today during "ballet practice," they did 10 rotations with the starling carcass. Tomorrow they will do 20. When Alice can make 70 orbits, she'll be ready for her first hunt. Meagan hopes to use her to control the burgeoning starling and house sparrow populations in her hometown.

Beyond that, Meagan isn't making plans. Because when your partner is a wild bird of prey, you never know when the dance may end. ▲

Matt Seek is the editor of Xplor, MDC's magazine for kids. When he isn't pushing words around a computer screen, he enjoys exploring wild places with his family.



TRAPPING THE ENEMY ON OUR LAND

MDC, PARTNERS MAKE STRIDES
IN ERADICATING FERAL HOGS

by Francis Skalicky

THERE ARE MANY
CREATURES
TO ENJOY AND
ADMIRE IN MISSOURI'S
OUTDOORS, BUT
FERAL HOGS AREN'T
ONE OF THEM.

They harm crop fields and pose disease threats to domestic hogs, pets, and even humans. Their destructive habits have far-reaching effects on wildlife and their habitats. To bottom line it, there's nothing desirable, valuable, or appealing about feral hogs. In Missouri, the disdain for these invasive hogs starts at the top.

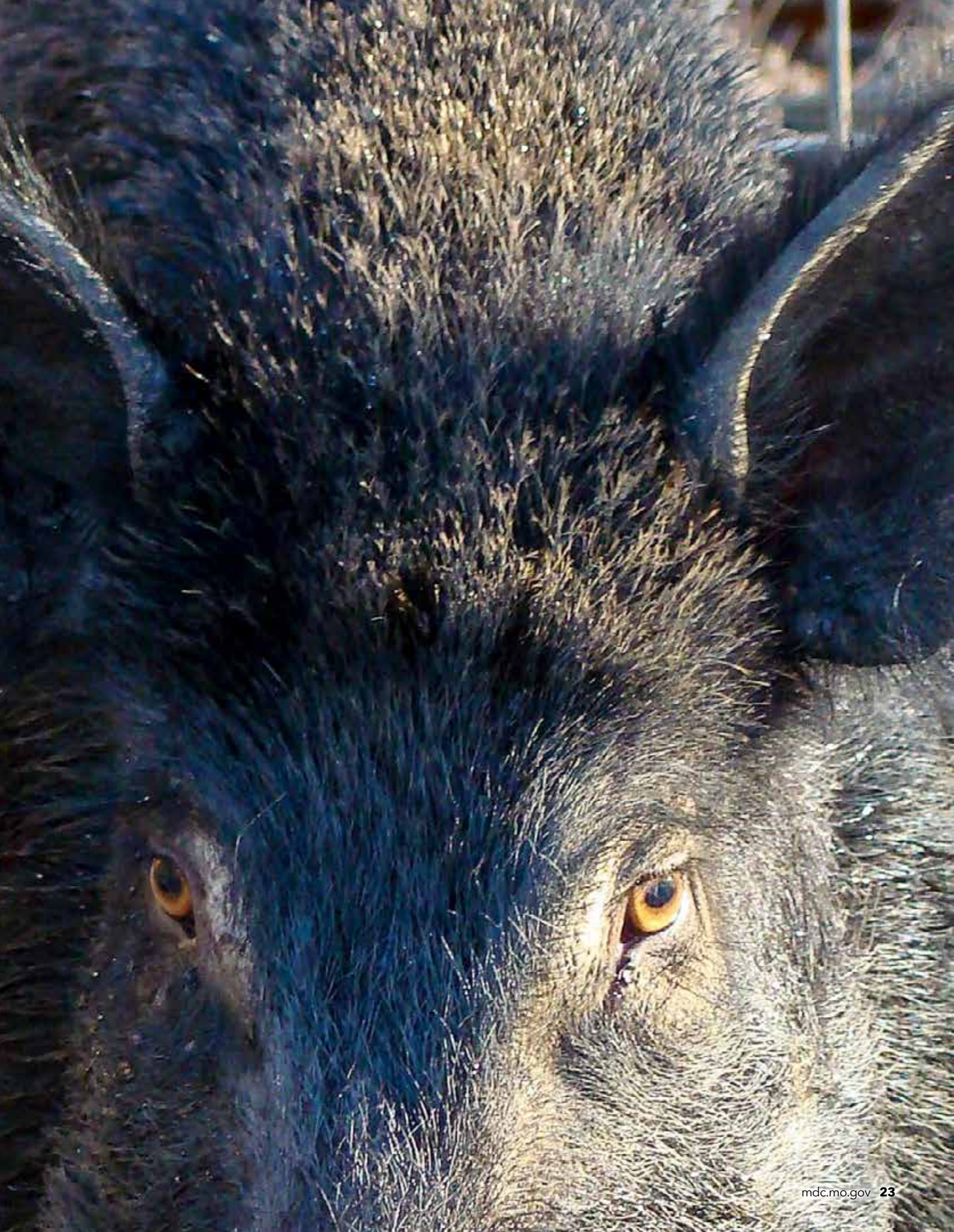
"Feral hogs are a danger to our state and pose serious safety risks to Missourians," Governor Mike Parson said. "They threaten both outdoor recreation and Missouri's agriculture industry — the backbone of our economy."

Gov. Parson's words echo the sentiment many biologists, farmers, and outdoor recreationalists across the state have towards feral hogs.

"I hate them," said Pat Hobbs, a Stoddard County farmer who's active with the Missouri Soybean Association. "There is no good use for them and they don't belong in the U.S."

**"They threaten
both outdoor
recreation
and Missouri's
agriculture
industry — the
backbone of our
economy."**

—Governor Mike Parson





Feral hogs root up grass fields, decimate crops, and destroy Missouri's natural habitats.

STRONGER TOGETHER

Missouri's current effort to eliminate feral hogs from the state is a multi-agency mission that involves MDC, Missouri Department of Agriculture (MDA), U.S. Forest Service (USFS), USDA Animal and Plant Health Inspection Service (APHIS), and 10 more strong partners that make up the Missouri Feral Hog Elimination Partnership (MFHEP). This group, which is currently chaired by MDC, was formed in 2015 and is the next generation of a task force that was formed by Gov. Matt Blunt in 2007 with a goal to aggressively control feral hogs in Missouri. The partnership's collaborative efforts have produced significant results, particularly in recent years. In 2020 alone, trappers have killed 7,482 feral hogs in Missouri through July. Since 2017, 33,932 have been killed.

"We are turning the corner in our war on feral hogs," said Jason Jensen, who is MDC's incident commander for feral hog operations. "The incident command structure that we have employed has all the players in the partnership on the same team working in a very coordinated way. This helps to

ensure accountability while avoiding duplication of effort and resources."

Besides taking hogs off the landscape, this collaborative effort has also helped keep dollars in billfolds. A USDA Wildlife Services report from earlier this year showed that MFHEP's feral hog management efforts, in the period from 2016–2019, prevented a minimum of \$24.9 million of annual damage to agricultural production.

"As this was a generalized analysis, it is believed this number may be an under estimation of the actual damages prevented, especially since it does not include damage to natural resources," said Travis Guerrant, the state director for the Missouri/Iowa APHIS Wildlife Services Program. Guerrant stressed the damage feral hogs could do to Missouri's ag economy if they got established in the Show-Me State is something that cannot be taken lightly. He points to a Texas A&M University study that estimates that feral hogs cause \$52 million of agricultural damage in Texas each year. On a broader scale, the USDA estimates feral hogs cause approximately \$1.5 billion in damage and control costs in the U.S. each year — \$800 million of that is due to direct damage to agriculture.

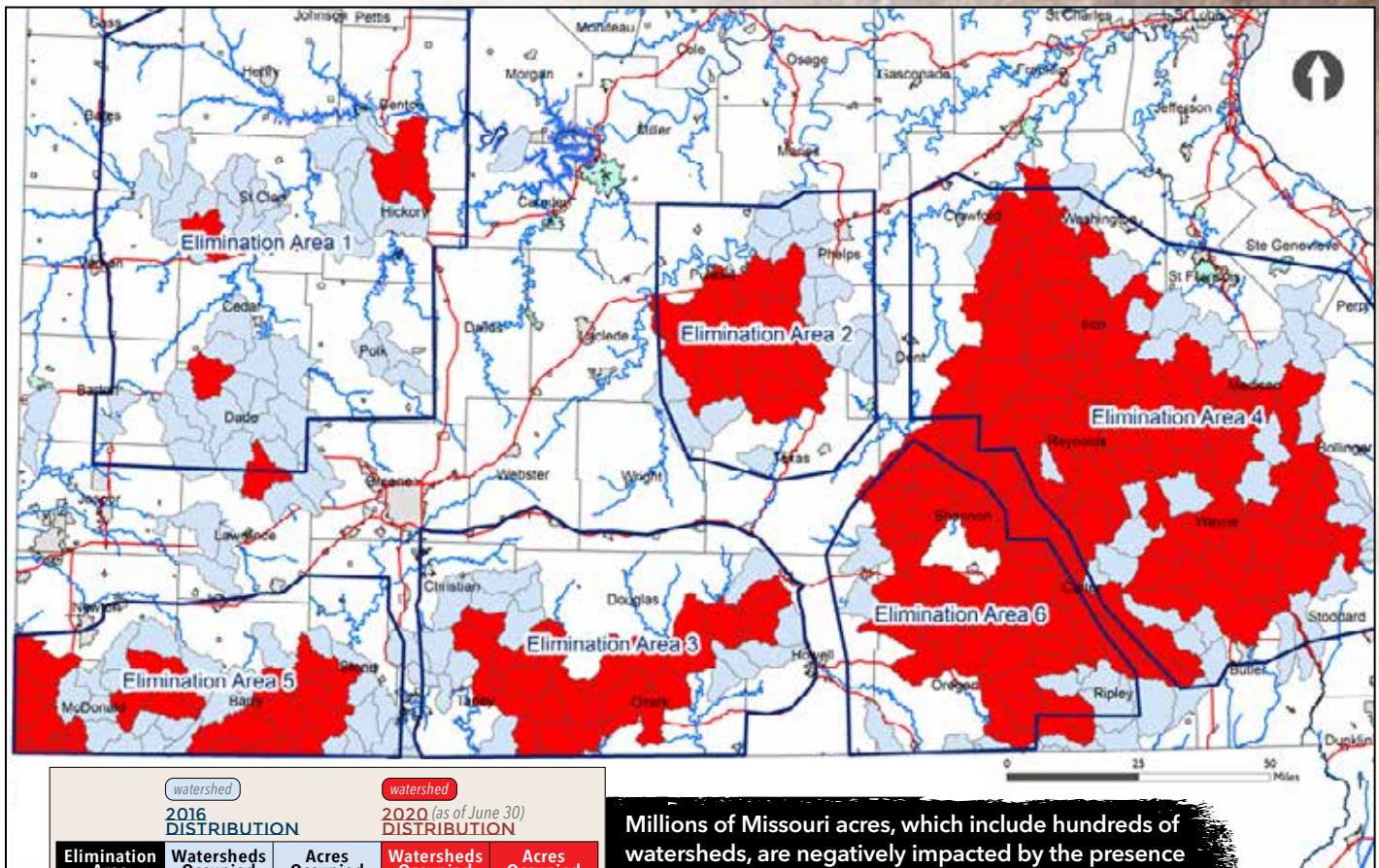
"In Missouri, feral hogs exist in the southern portion of the state," Guerrant said. "Most of the damage caused by feral swine here is rooting up grass fields in search of food. Re-establishing these fields is costly, and uprooted rocks can cause significant damages to equipment. Feral hogs also carry several diseases that could be devastating to a pork production herd. All of this further justifies the need to eliminate feral swine from Missouri."

THE GENETICS OF MISSOURI'S FERAL HOGS

Understanding Missouri's feral hog problem begins with knowing what a feral hog is and what it isn't. Feral hogs are not wildlife. Their genetic history is often mixed and muddled but their designation of being "feral" — a term used for free-ranging animals descended from domestic livestock — makes it clear they can't be classified as a wildlife species.



DAMAGED PASTURE, DAMAGED CROPS, MDC FILE; EROSION/TREE DAMAGE, DAVID STONNER; ROOTING HOGS, TRAIL CAM PHOTO; MAP, UNITED STATES DEPARTMENT OF AGRICULTURE; RESEARCHER, NOPPADOL PAOTHOONG



Elimination Area	watershed 2016 DISTRIBUTION		watershed 2020 (as of June 30) DISTRIBUTION	
	Watersheds Occupied	Acres Occupied	Watersheds Occupied	Acres Occupied
Area 1	44	1,170,986	6	181,170
Area 2	32	842,614	17	467,584
Area 3	46	1,068,093	29	654,934
Area 4 & 6	173	4,224,864	129	3,149,963
Area 5	78	1,704,376	29	663,898
TOTAL	383	9,279,214	210	5,117,549

Millions of Missouri acres, which include hundreds of watersheds, are negatively impacted by the presence of feral hogs. Coordinated eradication efforts are shrinking the damage footprint on our landscape.

Genetic analysis of Missouri feral hogs points to an activity that is adding an extra degree of difficulty to the already-challenging job of hog trapping — human-instigated illegal releases of feral hogs into the wild.

“Our genetics work has identified 14 genetic populations of feral swine in the state and has shown movements that are highly likely to be human-assisted,” Guerrant said. “This work also has highlighted the number of feral swine that are coming from areas outside of Missouri. Those are most certainly human-caused introductions. Recent information from the National Wildlife Research Center indicates that one out of eight hogs sampled in Missouri has genetic origins outside of the state.”

To be clear, these genetic findings aren’t based on hunches and hear-say. MFHEP field staff collect tissue samples from hogs that have been trapped and send these samples to a genetic analysis lab. The results of this analysis are provided to National Wildlife Research Center staff who compare the DNA to the known population of feral hogs in Missouri. This analysis can determine if a hog from one population in Missouri shows up in another population, or if a hog from outside of the state has been added to a population.



Once the hogs are trapped and dispatched, samples are collected and the data is used to trace their genetic origins.

“Other states are doing similar work,” Guerrant said, “and when we have feral hogs that show up from outside of Missouri, researchers work to compare those samples to the genetics of other states.”

In one year's time and at maximum reproduction, a single sow and her first litter can add up to 120 hogs to the population.



Baiting and waiting is the name of the game. By capturing the entire sounder, an entire breeding unit is eliminated.

Creating recreational opportunities is the most likely reasoning behind the feral hog releases that genetic work indicates are taking place in Missouri. The reason releasing feral hogs into the wild is a violation of Missouri's laws is that it's an incredibly bad idea.

Feral hog sows can reproduce at six months of age. A sow typically has two litters each year consisting of four to 10 pigs. This type of reproductive capability means a few hogs turned loose for hunting can quickly turn into big problems for adjacent landowners.

"Feral hogs are prolific breeders and can quickly populate an area where they are introduced," Guerrant said. "They cause significant damage and, as they populate an area, the damages start spilling onto neighboring properties, many of which are trying to make a living off the land and have a slim profit margin."

WHY TRAPPING HOGS WORKS

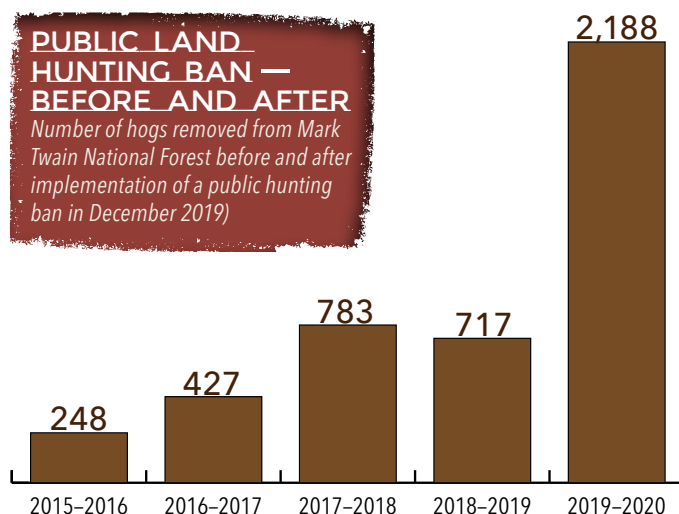
Hunting is an activity that involves a sport of the chase and a limited harvest so the overall population can be sustained for future recreation. This is not a compatible goal for the MFHEP or for landowners who simply want to use the most effective methods available to get rid of these invasive pests.

The MFHEP is using concentrated trapping efforts to eliminate hogs. Trapping — which involves attracting large groups of hogs to baited sites — is much more effective at eliminating large groups of hogs than individual shooting efforts that kill a few hogs and scatter the rest. Feral hog hunting was banned on all public lands so there was no longer a recreational incentive to have hogs in Missouri. Those closures have made trapping efforts more effective. The no-hunting measures have increased the number of catches and the number of hogs per catch. This no-hunting regulation does not apply to private land. Landowners can use any method — bait, lights, infra-red equipment, etc. — to remove hogs from their property.

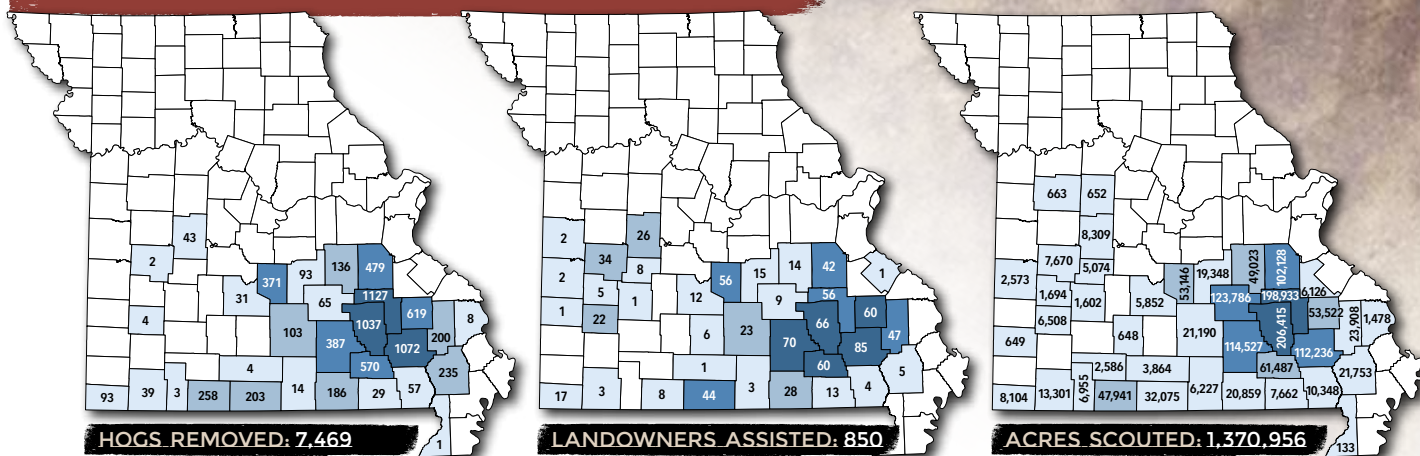
Earlier this year, the U.S. Forest Service, Ozark National Scenic Riverways, and MDC all developed regulatory changes

PUBLIC LAND HUNTING BAN — BEFORE AND AFTER

Number of hogs removed from Mark Twain National Forest before and after implementation of a public hunting ban in December 2019



FERAL HOG REPORT (JANUARY-JULY 2020)



that allow hunters with the proper unfilled deer or turkey hunting permit to take feral hogs during all deer and turkey hunting seasons. This comes under the category opportunistic take, which refers to takings that result from, but are not the purpose of, carrying out an otherwise lawful activity.

But all experts agree the best opportunities for removing feral hogs from Missouri's landscape are through trapping methods.

"Trapping hogs takes time," Jensen said. "Once you've identified fresh sign, it takes a few days to get them coming to bait consistently. When they're using the bait consistently, you build a trap and continue baiting for a few more days to make sure the entire sounder (group of hogs) is coming into the trap. Then you set the trap with a goal of catching the entire sounder. If the hogs are disturbed any time during that process, the trapper has wasted his time.

"Hogs are very smart," Jensen continued. "If someone shoots a pig or dogs are used to hunt them, they quickly learn not to come in to the bait."

Washington County farmer Jerry Richards has experienced feral hog problems on his land near Potosi and he agrees trapping is a better solution than hunting.

"You have to capture the entire group, the entire sounder, the males, the females, the little ones," he said. "You capture them as a unit, it eliminates that unit, and then there's no more breeding from them. By using the trapping method, this is what you get."

COLLABORATION IS KEY

The partnership of Richards and other Missouri landowners is an important piece of Missouri's collaborative efforts to eliminate feral hogs from the state.

"Landowners are the key to our success," Jensen said. "The majority of Missouri is owned by private landowners. Many of these landowners don't have the resources to fix the damage that feral hogs do."

MFHEP trappers are available to assist landowners with feral hog removal at no charge. Trappers provide all the equipment and do the work for as long as it takes to remove feral hogs from a landowner's

property. So far this year, the MFHEP has helped over 400 landowners in the state eliminate feral hogs on their farms.

These are numbers Gov. Parson likes to see and is why he supports the MFHEP's efforts to eliminate feral hogs in our state.

"The strategy is working. Trapping has proven itself an effective strategy, and we need to keep up the fight. It will not happen overnight, but it won't happen at all unless we stay persistent," said the Governor. ▲

Francis Skalicky has been the media specialist for MDC's Southwest Region since Jan. 1, 1996. He lives in Springfield and tries to enjoy the outdoors with his family as often as possible.

FERAL HOG TRAPPING IN OTHER STATES

It's important to note that Missouri isn't the only state that has recognized that trapping is a more effective method to eliminate feral hogs.

Kentucky Department of Fish and Wildlife —

Hunting is counterproductive to agency eradication efforts. Hunting fails as an eradication tool for wild pigs due to their high reproductive rate and intelligence.

The Arkansas Game and Fish Commission

recognizes large-scale trapping as the most efficient and economical means currently available to reduce feral hog populations. Sport hunting of feral hogs has been more a hindrance than benefit.

At Fort Riley Military Installation, researchers from **Kansas State University** found that cage traps proved to be their most effective method of controlling a feral hog population. They also found that public hunting of feral hogs proved "relatively unsuccessful."

For more information

All feral hog sightings, reports of illegal releases of feral hogs, and any type of tampering with trapping efforts can be reported to mdc.mo.gov/feralhog or by calling 573-522-4115, ext. 3296. Illegal feral hog activities also can be reported to MDC's Operation Game Thief Hotline, 800-392-1111. All information is kept in strict confidence.

Get Outside

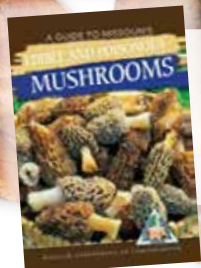
in

OCTOBER →

Ways to connect
with nature



Hen of the woods



Only consume mushrooms you know are edible. For more information about Missouri mushrooms, check out A Guide to Missouri's Edible and Poisonous Mushrooms at short.mdc.mo.gov/ZYM.

Chicken Chase

There are chickens to be found in the woods this fall, but they are not of the feathered kind. They are of the fungi kind. Hen of the woods, a choice edible, are ripe for the picking. They grow as a single large circular cluster on the ground at the base of oak trees or stumps. They are often found on the same tree year after year, so once you find a good spot, check it every autumn.

Give Your Rake a Break

Fall color peaks by mid-October, and by the end of the month, those beautiful red, yellow, and orange leaves begin to fall to the ground. Before you head outside for a day of yard work, why not give your rake a break? Fallen leaves provide much needed cover and nesting material for wildlife and dormant pollinators. Consider it your gift to nature, and a day off for yourself. You also can collect a few for a fun craft project.

Busy Beavers

It's a good time to catch a glimpse of a hardworking beaver — or two. Beavers are active during the day, gathering food and preparing their lodges for winter. They live in colonies — family groups comprising an adult male and female and their yearlings and kits — so you may see more than one.



Natural Events to See This Month

Here's what's going on in the natural world.



Most species of crayfishes breed in the fall



Listen for quail covey calls half an hour before dawn



Midland brownsnakes cross trails and roads in fall

How to Preserve Autumn Leaves

We all love the flashy colors of autumn leaves, but by the end of October, that flash starts to fade. Here's an easy way to keep those leaves brilliant, beautiful, and flexible all winter long.

What You Need

- An assortment of colorful leaves
- Glycerin (Look for it in the soap-making section of craft stores.)
- Water
- Measuring cup
- Two cake pans
- Paper towels

Step One: In a cake pan, stir one part glycerin into two parts water. You'll need enough of this mixture to cover all of the leaves you want to preserve. If you have lots of leaves, you can preserve them in batches.

Step Two: Place the leaves into the glycerin mixture. You can add several layers of leaves, but make sure each leaf is completely covered with the mixture.

Step Three: Place a weighted cake pan on top of the leaves to hold them down in the mixture. Let the leaves soak like this for three to five days. The longer they soak, the more flexible and better preserved they will be.

Step Four: Take out the leaves and blot off the glycerin with paper towels. (If the leaves aren't shiny and flexible, let them soak for a few more days.) The leaves may curl up a little bit. If you prefer flatter leaves, place them between paper towels and stack heavy books on top of them for several days.

You can use your leaves as table decorations for a Thanksgiving feast, tie them in bunches to use as Christmas tree ornaments, or weave them into a wreath to hang on your front door (most craft stores sell wreath frames).

The Steps



1



2



3



4



Northern two-striped walkingsticks mate in autumn



Black bears enter hibernation

Find this activity and more when you subscribe to Xplor, MDC's magazine for kids. Learn more at mdc.mo.gov/xplor.



Places to Go

SOUTHWEST REGION

Bicentennial Conservation Area

A former fort and birthplace of a Beetle

by Larry Archer

✧ Missouri has a long history with famous military leaders, including Laclede's Gen. John J. Pershing and Clark's Gen. Omar Bradley, but Bicentennial Conservation Area's (CA) military connection has an equally famous — albeit less distinguished — military career.

"Our paved trail — our ADA accessible trail with the observation deck — is the Mort Walker Trail," said Forestry District Supervisor Adam Bale, Bicentennial CA's manager. "He was the creator of Beetle Bailey, and Beetle Bailey was based off of the Fort Crowder army base."

The 721-acre area, located on Neosho's southeast side in Newton County, was once part of Fort Crowder, a World War II era training installation also known as Camp Crowder. Walker drew upon his experience at Fort Crowder to create Beetle Bailey, the comic strip that has run in thousands of newspapers since 1950.

In addition to Walker Trail, the area also has 7 miles of multiuse trails, Bale said.

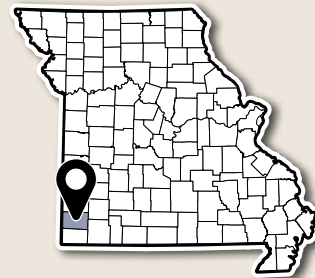
"We get a lot of bicyclists — mountain bikers — and horseback riders on them," he said. "The bicyclists like it because it's challenging, it's fairly rocky terrain, and the horseback riders like it because it's a wooded area, and it's pretty scenic to ride horses on."



"The fall color in there is pretty good because we've got quite a mix of native species."

—Bicentennial CA Manager Adam Bale

NORRADOI PAOTHONG



BICENTENNIAL CONSERVATION AREA

consists of 721 acres in Newton County. From the junction of Business 71 and Highway 59/60 in Neosho, take 59/60 east to Oak Ridge Extension, then south to Burr Crossing Road, then east to Landis Road. Continue east on Landis to Doniphan Drive, then south to area parking lots.

36.8378, -94.359

short.mdc.mo.gov/ZBH 417-895-6880

WHAT TO DO WHEN YOU VISIT



Birdwatching The eBird list of birds recorded at Bicentennial CA is available at short.mdc.mo.gov/Z23.



Camping Open camping



Hiking ADA accessible hiking trail with observation deck (0.8 mile). Multiuse (hiking, biking, equestrian) trails (7 miles)

DISCOVER MO OUTDOORS

Users can quickly and easily find outdoor activities close to home, work, or even while traveling with our free mobile app, MO Outdoors. Available in Android or iPhone platforms at mdc.mo.gov/mooutdoors.



WHAT TO LOOK FOR WHEN YOU VISIT



White-tailed deer



Raccoon



Pileated woodpecker



Sharp-shinned hawk



Jack-o'-lantern

Omphalotus illudens

Status

Poisonous

Size

Cap width: 2–8 inches
Stalk length: 2–8 inches
Stalk width: ½–¾ inch

Distribution

Statewide



Did You Know?

Jack-o'-lantern mushrooms are often mistaken for the edible chanterelle. Look beneath the Jack-o'-lantern mushroom to see its characteristic gill arrangement. This is one way to avoid confusing them with chanterelles, which are smooth underneath. Eating Jack-o'-lantern mushrooms will make you very sick for a few days.

Jack-o'-lantern mushrooms are aptly named — they are bright orange and appear in the fall, much like Jack-o'-lanterns of the squash variety. However, these Jack-o'-lanterns can be found in large clusters at the base of trees, on stumps, or on buried wood. They're also said to be bioluminescent — the gills of fresh specimens may sometimes give off a faint greenish glow at night or in a darkened room.



LIFE CYCLE

This species exists most of the time as a network of fungal cells (mycelium) within rotting logs, branches, or tree roots. When ready to reproduce, the mycelium develops the above-ground cluster of mushrooms, which are reproductive structures. Spores are produced in the gills and released to begin new mycelia elsewhere. The mycelium of a mushroom can live for decades.



ECOSYSTEM CONNECTIONS

Fungi are vitally important for a healthy ecosystem. This fungus feeds on dead hardwood trees such as oaks, decomposing their fallen logs and branches and buried roots. This cleans the forest and helps nutrients cycle back into the soil.

Outdoor Calendar

❖ MISSOURI DEPARTMENT OF CONSERVATION ❖

FISHING

Black Bass

Impounded waters and non-Ozark streams:
Open all year

Most streams south of the Missouri River:

- ▶ **Catch-and-Keep:**
May 23, 2020–Feb. 28, 2021
- ▶ **Catch-and-Release:**
Open all year

Bullfrogs, Green Frogs

June 30 at sunset–Oct. 31, 2020

Nongame Fish Giggling

Streams and Impounded Waters,
sunrise to midnight:
Sept. 15, 2020–Feb. 15, 2021

Paddlefish

On the Mississippi River:
Sept. 15–Dec. 15, 2020

Trout Parks

Catch-and-Keep:
March 1–Oct. 31, 2020

Catch-and-Release:
Nov. 13, 2020–Feb. 8, 2021

TRAPPING

Beaver, Nutria

Nov. 15, 2020–March 31, 2021

Other Furbearers

Nov. 15, 2020–Jan. 31, 2021

Otters, Muskrats

Nov. 15, 2020–Feb. 20, 2021

Rabbits

Nov. 15, 2020–Jan. 31, 2021

For complete information about seasons, limits, methods, and restrictions, consult the *Wildlife Code of Missouri* at short.mdc.mo.gov/Zib. Current hunting, trapping, and fishing regulation booklets are available from local permit vendors or online at short.mdc.mo.gov/ZZf.

HUNTING

Bullfrogs, Green Frogs

June 30 at sunset–Oct. 31, 2020

Coyote

Restrictions apply during April, spring turkey season, and firearms deer season.

Open all year

Crow

Nov. 1, 2020–March 3, 2021

Deer

Archery:

Sept. 15–Nov. 13, 2020

Nov. 25, 2020–Jan. 15, 2021

Firearms:

- ▶ **Early Youth Portion** (ages 6–15):
Oct. 31–Nov. 1, 2020
- ▶ **November Portion:**
Nov. 14–24, 2020
- ▶ **Late Youth Portion** (ages 6–15):
Nov. 27–29, 2020
- ▶ **Antlerless Portion** (open areas only):
Dec. 4–6, 2020
- ▶ **Alternative Methods Portion:**
Dec. 26, 2020–Jan. 5, 2021

Dove

Sept. 1–Nov. 29, 2020

Elk

Archery:
Oct. 17–25, 2020

Firearms:
Dec. 12–20, 2020

New Elk Hunting Season

MDC will offer Missourians the state's first elk-hunting season in modern history starting this fall. Learn more at short.mdc.mo.gov/Znd.

Groundhog (woodchuck)

May 11–Dec. 15, 2020

Other Furbearers

Nov. 15, 2020–Jan. 31, 2021

Pheasant

Youth (ages 6–15):
Oct. 24–25, 2020

Regular:

Nov. 1, 2020–Jan. 15, 2021

Quail

Youth (ages 6–15):
Oct. 24–25, 2020

Regular:

Nov. 1, 2020–Jan. 15, 2021

Rabbit

Oct. 1, 2020–Feb. 15, 2021

Sora, Virginia Rails

Sept. 1–Nov. 9, 2020

Squirrel

May 23, 2020–Feb. 15, 2021

Turkey

Archery:

Sept. 15–Nov. 13, 2020

Nov. 25, 2020–Jan. 15, 2021

Firearms:

- ▶ **Fall:** Oct. 1–31, 2020

Waterfowl

See the *Migratory Bird and Waterfowl Hunting Digest* or visit short.mdc.mo.gov/ZZx for more information.

Wilson's (Common) Snipe

Sept. 1–Dec. 16, 2020

Woodcock

Oct. 15–Nov. 28, 2020

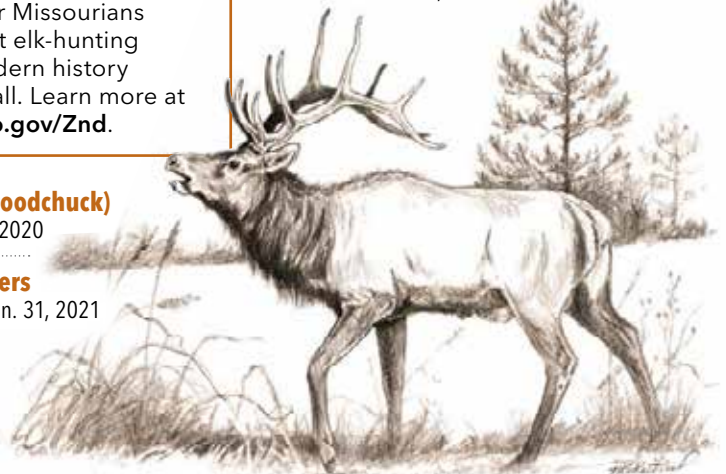


ILLUSTRATION: MARK RATHIEL



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on Instagram**

@moconservation

Don't stay inside like this cave salamander. Venture outside this fall and discover a world alive with color. The peak of fall color in Missouri is usually around mid-October. This is when maples, ashes, oaks, hickories, and more are at the height of their fall display. Discover nature's artwork.

📷 by **Noppadol Paothong**